

IN THE CLAIMS

Please amend the claims as indicated in the following listing of claims, which replaces all prior listings of claims.

1. (Currently Amended) Materials for cathode in solid oxide fuel cells(SOFCs), comprising:

an oxide having oxygen vacancies and high conductivity as cathode, wherein cathode accelerating absorption of oxygen molecule and diffusion of oxygen ion; said materials having general form as $\text{Ln}_{1-x}\text{A}_x\text{Cu}_{1-y}\text{B}_y\text{O}_{2.5\pm\delta}$, wherein Ln is lanthanide ion, A is alkaline-earth metal, B is metal selected from the group consisting of cobalt(Co), iron(Fe), nickel(Ni), zinc (Zn), manganese (Mn), aluminum(Al), vanadium(V), iridium(Ir), molybdenum (Mo), palladium (Pd), platinum(Pt), magnesium (Mg), ruthenium(Ru), rhodium(Rh), chromium(Cr) and zirconium (Zr), X is greater than or equal to 0 and less than or equal to 1, Y is greater than or equal to 0 and less than 0.99, δ is greater than or equal to 0 and less than or equal to 0.5; and ~~doping different alkaline-earth metals to said A,~~ convertingdoping of A-side by alkaline-earth metals, converting partly copper(Cu) to trivalence copper ion, forming perovskite having oxygen vacancies with regularity sequence, utilizing catalytic accelerating cathode reaction of cathode electrode, compounding electron being conducted though external circuit with ~~conversing~~ converting oxygen to forming oxygen ion, obtaining anode and hydrogen reaction by diffusing oxygen ion to electrolyte.

2. (Original) The materials according to claim 1, wherein said materials comprise at least 1% copper(Cu).
3. (Canceled)
4. (Canceled)
5. (Canceled)
6. (Currently Amended) The materials according to claim 1, wherein said $\text{Ln}_{1-x}\text{A}_x\text{Cu}_{1-y}\text{B}_y\text{O}_{2.5\pm\delta}$ is operating for said cathode in solid oxide fuel cells(SOFCs) operating at a temperature in a range of 400-800 degrees Celsius.
7. (Canceled)
8. (New) Materials for cathode in solid oxide fuel cells(SOFCs), comprising:
an oxide having oxygen vacancies and high conductivity as cathode, wherein cathode accelerating absorption of oxygen molecule and diffusion of oxygen ion; said materials having general form as $\text{Ln}_{1-x}\text{A}_x\text{Cu}_{1-y}\text{B}_y\text{O}_{2.5\pm\delta}$, wherein Ln is lanthanide selected from the group consisting of lanthanum (La), cerium(Ce), praseodymium(Pr), neodymium(Nd), promethium(Pm), samarium(Sm), europium(Eu), gadolinium(Gd), terbium(Tb), dysprosium(Dy),

holmium(Ho), erbium(Er), thulium(Tm), ytterbium(Yb) and lutetium(Lu), A is alkaline-earth metal selected from the group consisting of beryllium(Be), magnesium(Mg), calcium(Ca), strontium(Sr), barium(Ba) and radium(Ra), B is metal selected from the group consisting of cobalt(Co), iron(Fe), nickel(Ni), zinc (Zn), manganese (Mn), aluminum(Al), vanadium(V), iridium(Ir), molybdenum (Mo), palladium (Pd), platinum(Pt), magnesium (Mg), ruthenium(Ru), rhodium(Rh), chromium(Cr) and zirconium (Zr), X is greater than or equal to 0 and less than or equal to 1, Y is greater than or equal to 0 and less than 0.99, δ is greater than or equal to 0 and less than or equal to 0.5; and doping of A-side by alkaline-earth metals, converting partly copper(Cu) to trivalence copper ion, forming perovskite having oxygen vacancies with regularity sequence, utilizing catalytic accelerating cathode reaction of cathode electrode, compounding electron being conducted though external circuit with converting oxygen to forming oxygen ion, obtaining anode and hydrogen reaction by diffusing oxygen ion to electrolyte.

9. (New) Materials for cathode in solid oxide fuel cells(SOFCs)

having the general form $ABO_{2.5\pm\delta}$, comprising:

an oxide having oxygen vacancies and high conductivity as cathode, wherein cathode accelerating absorption of oxygen molecule and diffusion of oxygen ion; said materials having general form as $Ln_{1-x}A_xCu_{1-y}B_yO_{2.5\pm\delta}$, wherein Ln is lanthanide ion, A is alkaline-earth metal, B is metal selected from the group consisting of cobalt(Co), iron(Fe), nickel(Ni), zinc (Zn), manganese (Mn),

aluminum(Al), vanadium(V), iridium(Ir), molybdenum (Mo), palladium (Pd), platinum(Pt), magnesium (Mg), ruthenium(Ru), rhodium(Rh), chromium(Cr) and zirconium (Zr), X is greater than or equal to 0 and less than or equal to 1, Y is greater than or equal to 0 and less than 0.99, δ is greater than or equal to 0 and less than or equal to 0.5; and doping of A-side by alkaline-earth metals, converting partly copper(Cu) to trivalence copper ion, forming perovskite having oxygen vacancies with regularity sequence, utilizing catalytic accelerating cathode reaction of cathode electrode, compounding electron being conducted though external circuit with converting oxygen to forming oxygen ion , obtaining anode and hydrogen reaction by diffusing oxygen ion to electrolyte.